Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

Unit 191 – Crude Unit
Unit 7991 – Saturate Gas Unit
Alliance Refinery
ConocoPhillips Company
Belle Chasse, Plaquemines Parish, Louisiana
Agency Interest Number: 2418
Activity Number: PER19960005
Draft Permit No. 2180-V0

I. APPLICANT:

Company:
ConocoPhillips Company
P.O. Box 176, Belle Chasse, LA 70037

Facility:
Alliance Refinery
15551 Hwy 23, Belle Chasse, Plaquemines Parish, Louisiana
Approximate UTM coordinates are 211.51 kilometers East and 3,286.84 kilometers North, Zone 16

II. FACILITY AND CURRENT PERMIT STATUS:

ConocoPhillips Company owns and operates Alliance Refinery, a petroleum refinery located in Belle Chasse, Louisiana. Gulf Oil Company built the refinery in 1970. BP Oil Company owned Alliance Refinery from 1985 until Tosco Corporation purchased it in September 2000. ConocoPhillips Company bought the refinery on January 1, 2003.

Alliance Refinery produces a wide range of petroleum products from crude oil, such as motor gasoline, jet fuel, diesel fuel, LPG, carbon black feedstock, propane, and coke. It also produces by-product elemental sulfur and petrochemicals such as benzene, toluene, and xylene. The plant is covered by Standard Industrial Classification (SIC) 2911.

Unit 191 – Crude Unit is designed to process crude oil into the following unit products:

Atmospheric Column (191-V-3)	Vacuum Column (191-V-6)
Unstabilized Naphtha	Light Vacuum Gas Oil
Light Furnace Oil	Heavy Vacuum Gas Oil

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Atmospheric Column (191-V-3)	Vacuum Column (191-V-6)
Heavy Furnace Oil	Vacuum Tower Bottoms
Atmospheric Gas Oil	
Atmospheric Tower Bottoms	

Preheated crude enters the desalters where salts, water, and sediment are removed. The crude furnace heats the crude before it enters the atmospheric tower for fractionation into the products listed above. The lighter oils are extracted from the tower top sections. The heavier oils feed the crude vacuum tower unit for distillation under a vacuum to recover gas oils. The atmospheric tower bottoms are heated and enter the vacuum tower. The lighter materials go up the tower. The overhead vapors are burned in a furnace. The overhead liquid is recycled to the crude charge. The heaviest material, vacuum tower bottoms, is used as coker feed stock.

Unit 7991 – Saturate Gas Unit recovers propane and heavier products from various refinery liquids and vapors containing primarily saturated hydrocarbons. The unit produces the following products: propane, mixed butanes, light straight run gasoline, and straight run gasoline.

This unit consists of two sections, the debutanizer section and the absorber-stripper-fractionation section. In the debutanizer section, the crude unit naphtha is processed and sent on as feed stock to the Naphfining unit. The absorber-stripper-fractionator section produces the propane/butane feed stock for the alkylation unit.

In addition, the facility has several state permits that will remain effective until replaced by a Part 70 permit. These include:

Permit Number	Units or Sources	Date Issued
33	Refinery Wide	10/20/70
1607T	Flare Gas Compressor	08/17/81
2163	Benzene Recovery Unit	10/08/92
2180	Source 191-H-3	03/04/93

Several Part 70 and PSD permits addressing portions of the facility have already been issued. These include:

Permit Number	Units or Sources	Unit Name	Date Issued
PSD-LA-75(M-2)	Unit 301	Boilers	10/13/87
PSD-LA-624	Source 301-B-3	Supplemental Boiler	09/16/98
2593-V0	Unit 293	Gulfining Unit	02/08/99
2113-V0	Unit 292	Diesel Hydrotreater Unit	12/07/00
2513-V4	Unit 412	Offsites	12/07/05
2776-V0	Unit 7591	Merox Treater Unit	10/18/02
2511-V2	Unit 891	Delayed Coking Unit	11/16/05
2840-V0	Unit 294	Low Sulfur Gasoline Unit	10/03/03
PSD-LA-696	Unit 294	Low Sulfur Gasoline Unit	10/03/03
2512-V1	Unit 491 & Unit 6191	HF Alkylation & Light Ends Recovery Unit	10/08/03
2778-V0	Unit 303,	Utilities	08/16/04
2774-V1	Unit 591/592	Sulfur Recovery Unit	09/21/05
1810-V2	Unit 1291/301	Fluidized Catalytic Cracking Unit/CO Boilers	02/22/05
1870-V0	Unit 308W	Wastewater Treatment Unit	08/23/05
2313-V0	Unit 406	Marine Loading and Transfer Operations	02/09/06

Finally, several applications for initial Part 70 permits addressing the remaining portions of the facility are still under review by the department. These include:

Units	Unit Name
Unit 291/1391	Naphfining/Catalytic Reforming Unit
Unit 1791/1792	Aromatic Extraction/Thermal Hydrodealkylation Unit
Unit 191/7991	Crude Unit/Saturated Gas Unit
Unit 308F	Flares

III. PROPOSED PERMIT / PROJECT INFORMATION:

Permit Application Submittal Information

BP Oil Company submitted applications and Emission Inventory Questionnaires (EIQ) dated October 7, 1996, requesting Part 70 permits for Unit 191 and Unit 7991. ConocoPhillips Company submitted a revised application and Emission Inventory Questionnaire (EIQ) dated October 13, 2005, requesting a Part 70 permit combining Unit 191 and Unit 7991.

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Project description

ConocoPhillips Company proposes the following changes:

- Consolidate the Crude Unit, Unit 191, and the Saturate Gas Unit, Unit 7991, into a single initial Title V permit. Originally, two separate applications were submitted.

- Update the fugitive emission estimates with updated emission factors and fugitive component counts.

- Update the average and maximum firing rates for heaters in Unit 191. The firing rates reflect the higher heating value as per EPA guidance.

- Update heater emission calculations using the most recent EPA (AP-42, Fifth Editions, Volume 1, Section 1.4 Natural Gas Combustion, 1998 edition) emission factors and most recent stack test data.

- Reduce SO_2 emission estimates significantly from the initial Title V permit application. The Crude Charge Heater, Emission Point No. 191-H-1, combusts both refinery fuel gas and induction gas (vacuum tower overhead gas), which is a fuel with a relatively high sulfur content. As a result of updated process information, the SO_2 emissions estimates were revised for the induction gas and the SO_2 emissions compared to the initial submittal are reduced by approximately one thousand tons per year.

- Update the specific requirements for the Vacuum Charge Heater, Emission Point No. 191-H-2, to reflect change required under the Consent Decree, Civil Action H-05-0258 lodged January 27, 2005). This heater became subject to 40 CFR 60 Subpart J requirements on the date of lodging of the Consent Decree.

- Per the Consent Decree the other non-NSPS Subpart J heater, Emission Point No. 191-H-1, will become subject to Subpart J requirements on December 31, 2006. A modification to the permit will be submitted during the third quarter of 2006 to reflect this change. The third heater of the unit, Emission Point No. 191-H-3, is currently subject to NSPS Subpart J regulations.

- Delete Unit Vent for Flash Drums, Emission Point No. 7991-D-1. This source is no longer considered to be an emission source.

- Add Unit Fugitives for Saturate Gas Unit, Emission Point No. 7991-FF, a previously grandfathered source.

- Rename the emission point number for the Vacuum Charge Heater from Emission Point No. 2-92 to 191-H-3.

Permitted Air Emissions

Estimated emissions in tons per year are as follows:

Pollutant	Before**	After	Change
PM_{10}	51.50	49.50	- 2.00
SO_2	26.40	576.46	+550.06
NO_X	615.00	1351.76	+736.76
CO	71.70	547.55	+475.85
VOC	47.72	91.52	+ 43.80

** The "Before" total includes emission sources permitted in the State Permit No. 2180, issued March 4, 1993, as well as the grandfathered emission source not included in the state permit. For the "Before" Totals, current emission factors were used for the Unit Fugitives for Saturate Gas Unit, Emission Point No. 7991-FF, that was not included in any state permits.

The increases in emissions are due to updated emission estimation calculations, updated component counts for fugitive emissions, and the addition of previously grandfathered/unpermitted sources. Also, Sulfur Dioxide emissions were erroneously estimated for the Crude Charge Heater, Emission Point No. 191-H-1 in State Permit No. 2180.

Prevention of Significant Deterioration Applicability

This plant is not being modified; therefore, PSD does not apply.

This application was reviewed for compliance with the Louisiana Preconstruction and Part 70 operating permit program. It was also reviewed for compliance with Louisiana Air Quality Regulations, National Emission Standards for Hazardous Air Pollutants (NESHAP), and New Source Performance Standards (NSPS). Prevention of Significant Deterioration (PSD) does not apply.

MACT requirements

Compliance with the Louisiana Fugitive Emission Consolidation Program, with 40 the Louisiana Refinery MACT being the most stringent program, is determined as MACT for fugitive emissions. 40 CFR 63 Subpart CC is determined MACT for the Vacuum Gas Knockout Drum, Emission Point 191-V-13.

Air Modeling Analysis

Dispersion Model(s) Used: ISCST3

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Air Quality Standard (NAAQS)
NO_X	Annual	20.56 $\mu g/m^3$	100 $\mu g/m^3$
SO_2	3-hour	68.50 $\mu g/m^3$	1300 $\mu g/m^3$
	24-hour	169.13 $\mu g/m^3$	365 $\mu g/m^3$
	Annual	16.18 $\mu g/m^3$	80 $\mu g/m^3$

The dispersion model was run for the Clean Fuels project. Emission estimates have not changed significantly since the model was run.

Impact on air quality from Unit 191 – Crude Unit and Unit 7991 – Saturate Gas Unit will be below the National Ambient Air Quality Standards (NAAQS) and the Louisiana Ambient Air Standards (AAS) beyond industrial property.

General Condition XVII Activities

The facility will comply with the applicable requirements of General Condition XVII of the Louisiana Air Emission Permit General Conditions in the Title V Permit. For a list of approved General Condition XVII Activities, refer to Section VIII of the draft Part 70 permit. These releases are small and will have an insignificant impact on air quality.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the draft Part 70 permit.

IV. Permit Shields

A permit shield was not requested.

V. Periodic Monitoring

Fugitive emissions must be monitored according to the provisions of Louisiana Refinery MACT. The hydrogen sulfide content in the fuel gas is monitored continuously as per NSPS Subpart J for the vacuum charge heaters.

VI. Applicability and Exemptions of Selected Subject Items

Regulatory applicability, standards, monitoring, reporting and recordkeeping requirements are provided in the Facility Specific Requirements Section of the draft permit. The table below summarizes highlights of the regulatory applicability for each emission point.

Source ID No.:	Requirement	Applicability
Facility – Unit 191 and Unit 7991	40 CFR 61.340 Subpart FF– National Emission Standard for Benzene Waste Operations.	EXEMPT. Unit has no benzene waste. Refinery has > 10 Mg/yr benzene from waste and must meet control, reporting, and recordkeeping requirements. (See Title V Permit, Unit 308W, Wastewater Treatment Unit.)
191-H-1 Crude Charge Heater	LAC 33:III.1101.B – Control of Emissions of Smoke	Emissions of smoke shall be controlled so shade is not darker than 20% opacity. Particulate matter source shall be controlled so that the shade or appearance of emissions is not denser than 20% average opacity (except for >20% for not more than one 6 min. period in any 60 consecutive min.)
	LAC 33:III.1503.C – Emission Standard for Sulfur Dioxide	Unit emits >250 tpy SO_2. Discharge gases shall not exceed concentrations of 2,000 ppmv SO_2 (3-hour average).
	40 CFR 60 Subpart J – Standards of Performance for Petroleum Refineries (40 CFR 60.100)	DOES NOT APPLY – Heater has not been constructed or modified after June 11, 1973. Heater will become subject to Subpart J as of December 31, 2006 to fulfill Consent Decree requirements.
191-H-2, 191-H-3 Vacuum Charge Heater	LAC 33:III.1101.B – Control of Emissions of Smoke	Emissions of smoke shall be controlled so shade is not darker than 20% opacity. Particulate matter source shall be controlled so that the shade or appearance of emissions is not denser than 20% average opacity (except for >20% for not more than one 6 min. period in any 60 consecutive min.)

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Source ID No.:	Requirement	Applicability
191-H-2, 191-H-3 Vacuum Charge Heater (Continued)	LAC 33:III.1503.C Emission Standard for Sulfur Dioxide	EXEMPT Units emitting <250 tpy SO_2 may be exempted. Source emits less than 250 tons per year of SO_2.
	LAC 33:III.5109.A Comprehensive Toxic Air Pollutant Emission Control Program	EXEMPT Air toxic emissions from the combustion of Group 1 virgin fossil fuels are exempted per LAC 33:III.5105.B.3.a.
	40 CFR 60 Subpart J – Standards of Performance for Petroleum Refineries (40 CFR 60.100)	Fuel gas shall not contain >0.1 gr/dscf of H_2S (3-hour rolling average). Via consent decree, Subpart J applies to 191-H-2 even though it has not been modified since June 11, 1973.
191-V-13 Vacuum Gas Knockout Drum	LAC 33:III.2115 Waste Gas Disposal	DOES NOT APPLY This section does not apply to waste gas streams that are required by another federal regulation to implement controls that reduce VOC to a more stringent standard. Waste gas stream is required by NESHAP Subpart CC to implement controls to reduce VOC emissions.
	LAC 33:III.2139.A Petroleum Refinery Operations – Refinery Vacuum Producing Systems	DOES NOT APPLY The Section does not apply to refinery vacuum producing systems that are required by another federal regulation to implement controls that reduce VOCs to a more stringent standard. NESHAP Subpart CC is more stringent standard.
	40 CFR 63 Subpart CC – National Emission Standards for Organic HAPs – Process Vent Provisions	Process heater or boiler with heat input design capacity > or = 150 MM BTU/hr used as a control device to reduce emissions of organic HAPs by 98 % wt.
191-FF, 7991-FF Unit Fugitives for Unit 191, Unit Fugitives for Unit 7991	LAC 33:III.5109.A Comprehensive Toxic Air Pollutant Emission Control Program	Control emissions of toxic air pollutants to a degree that constitutes Maximum Achievable Control Technology (MACT) as approved by DEQ. Compliance with the Louisiana Fugitive Emission Consolidation Program, with Louisiana MACT for Refineries being the most stringent program, is determined as MACT.

VII. Streamlined Requirements

Unit or Plant Site	Programs Being Streamlined	Stream Applicability	Overall Most Stringent Program
Unit 191 – Crude Unit Unit 7991- Saturate Gas Unit	LAC 33:III.Chapter 51, LA MACT for Refineries LAC 33:III.2121, Louisiana Fugitive Emission Control	≥ 5% VOTAP (Class I + II) ≥ 10% VOC	LA MACT for Refineries

VIII. Glossary

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

CAM - Compliance Assurance Monitoring rule – A federal air regulation under 40 CFR Part 64

Carbon Black - A black colloidal substance consisting wholly or principally of amorphous carbon and used to make pigments and ink.

Carbon Monoxide (CO) – (Carbon monoxide) a colorless, odorless gas produced by incomplete combustion of any carbonaceous (gasoline, natural gas, coal, oil, etc.) material.

Cooling Tower – A cooling system used in industry to cool hot water (by partial evaporation) before reusing it as a coolant.

Continuous Emission Monitoring System (CEMS) – The total combined equipment and systems required to continuously determine air contaminants and diluent gas concentrations and/or mass emission rate of a source effluent.

Cyclone – A control device that uses centrifugal force to separate particulate matter from the carrier gas stream.

Duct Burner – A device that combusts fuel and that is placed in the exhaust duct from another source (such as a stationary gas turbine, internal combustion engine, kiln, etc.) to allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a steam generating unit.

Federally Enforceable Specific Condition - A federally enforceable specific condition written to limit the potential to Emit (PTE) of a source that is permanent, quantifiable, and practically enforceable. In order to meet these requirements, the draft permit containing the federally enforceable specific condition must be placed on public notice and include the following conditions:

- A clear statement of the operational limitation or condition which limits the source's potential to emit;
- Recordkeeping requirements related to the operational limitation or condition;
- A requirement that these records be made available for inspection by LDEQ personnel;
- A requirement to report for the previous calendar year.

Grandfathered Status- Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

Heat Recovery Steam Generator (HRSG) – A steam generator that recovers exhaust heat from a gas turbine, and provides economizing and steam generation surfaces.

Hydrogen Sulfide (H_2S) - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

NESHAP - National Emission Standards for Hazardous Air Pollutants –Air emission standards for specific types of facilities, as outlined in 40 CFR Parts 61 through 63

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

NSPS - New Source Performance Standards – Air emission standards for specific types of facilities, as outlined in 40 CFR Part 60

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10}- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Selective Catlaytic Reduction (SCR) – A noncombustion control technology that destroys NO_X by injecting a reducing agent (e.g., ammonia) into the flue gas that, in the presence of a catalyst (e.g., vanadium, titanium, or zeolite), converts NO_X into molecular nitrogen and water.

Sulfur Dioxide (SO_2) – An oxide of sulfur.

TAP - Toxic Air Pollutant (LDEQ acronym for air pollutants regulated under LAC 33 Part III, Chapter 51, Tables 1 through 3).

Title V permit – See Part 70 Operating Permit.

"Top Down" approach – An approach which requires use of the most stringent control technology found to be technically feasible and appropriate based on environmental, energy, economic, and cost impacts.

Turbine – A rotary engine in which the kinetic energy of a moving fluid is converted into mechanical energy by causing a bladed rotor to rotate.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the

administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.